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muscular acts which, in many birds, are synchronous with the utterance of certain notes, may thus be motions which are necessary to the special operation of the air-sacs.

And if this be true it affords an explanation of the fact that the song of many birds is often more varied and prolonged in flight than when they are at rest, and that the highest vocal expression of some birds, as the Oven-bird, the Maryland Yellow-throat, and the Yellow-breasted Chat, for examples, is achieved only when the birds are on the wing.

The surprising length of time for which singing is often sustained argues greater resources of air supply than the mere capacity of the lungs, and here again we may have recourse to a special operation of the pneumatic system.

We have already seen that birds in general are most voiceful when having least fat; if the growth of fat on the body reduces the capacity of any of the air-sacs a reason for this is evident.

(*To be continued.*)

NOTES ON THE BIRDS OF THE NEARER ISLANDS, ALASKA.

BY LUCIEN M. TURNER.

THE localities here included embrace the islands of Attoo, Agattoo, and Semechi, with their outlying islets. The geographical position of the group lies between $185^{\circ} 30'$ and $187^{\circ} 30'$ W. of Greenwich. The parallel of 52° N. passes near their center. The group forms the westernmost portion of the Aleutian chain of islands, and, taken collectively, is known as the Bleezhnee or Nearer Islands, being so designated by the earlier explorers because they lie nearest to the Asiatic coast.

Semechi is the smallest of the three, and lies about twenty-three miles to the southeast of Attoo. It is quite low on the southern side, where are found innumerable ponds and lakes, some of the latter being of considerable area. The low-grounds are covered with vegetation of various kinds, and the shallower ponds, in some instances, yield vegetable food in abundance for the great numbers

of Ducks and Geese which breed there. On the northern side of the island the shore is precipitous, rising at several localities several hundred feet, and abounds in niches, ledges, and crevices where breed vast numbers of Puffins, Auks, Murres, and Guillemots, which find an abundance of food in the neighboring sea.

Agattoo Island forms the southwest portion of the group, and is of considerable size, being but slightly less than Attoo, and much larger than Semechi. The shores of this island are more elevated and abrupt, having many indentations, at the head of which small streams issue from the larger lakes. The general character of the surface is undulating, though much broken, being everywhere intersected by a network of ravines and valleys, separating hills and mountains, some of which latter are over 1600 feet in height. These valleys and the lower grounds contain many lakes, in which is found an abundance of fresh-water vegetation. High grasses and other plants crown the cliffs and occupy the tops of rocks, affording suitable nesting places for various Auks and Puffins. Thousands of Geese are also hatched here. Here too the Snowy Owl and two species of Hawks breed, the young of the water birds affording them abundant food. The only mammals occurring on either Semechi or Agattoo are marine species — the sea-otter, sea-lion, some three species of hair-seals. An occasional fur-seal may also be seen in the vicinity.

Attoo is the largest of the group, and has an east and west extension of nearly thirty-five miles, and a breadth of nearly fourteen miles. The shore is remarkably indented, often for several miles, forming bays and coves. The shores are mostly abrupt, with but little beach, excepting in certain places on portions of the northern side and eastern end of the island, where several wide-mouthed valleys gradually rise toward the hillsides, which in most instances are very steep. Attoo is much more mountainous than either of the other islands of the group. The mountains are high, rising in a few instances above 2500 feet, and are accessible only by most fatiguing ascents, the approaches to the summits being steep and difficult. The mountain range extends length-wise through the island, with several spurs of irregular height shooting off at various angles from the main range. The valleys, some of which are quite broad, are traversed by streams, two of which, issuing from large lakes, are of great size. The sides of the hills and the valleys are plentifully clothed with vegetation, and many berries

are to be found. In the fall of the year these are the favorite feeding-grounds of thousands of Geese, a few of which are hatched on Semechi but the greater part on Agattoo. The Geese, feeding on the ripening berries in late August, September, and October, rapidly fatten after their moult and become so heavy that I have known them to burst their skins in falling when shot on the wing. The high bluffs afford the Cormorants a safe breeding-place; the grassy ledges near the water form convenient nesting sites for Eiders; and in the recesses of the rocks Auks and Puffins abound. Here blue foxes (*Vulpes lagopus*) are found in numbers. The natives have very wisely restricted the foxes to this large island, otherwise they would not be able to procure the birds — Puffins and Guillemots — from whose skins they make a long garment for protection against the cold of winter. These garments were used nearly exclusively during the Russian *régime*, and previous to the discovery of the islands they were the only garment worn by either sex. About forty skins are required for a single garment.

These islands possess a warmer climate than the eastern portion of the Aleutian Chain, the winter temperature never falling as low as zero. The lowest degree of cold recorded by me was 10.5° F., and this in the coldest season the natives could remember. The summer is often bright and warm; the maximum temperature reaching 76° F. Much cloudy weather occurs at times, but it is generally fair from July to October. Rain falls every month in the year, although March is known as the snow month. Fogs often continue for several days at a time, but seldom overhang the land; Semechi and Agattoo, however, are more foggy than Attou. Rain often falls heavily, but only for brief intervals. Storms are often excessively severe, and during the winter are of frequent occurrence, the winds from the southwest and southeast being often very violent, causing a terrible sea to dash against the shores.

The following list of birds consists of species actually collected, or else identified beyond possibility of error, with the addition, for the sake of completeness, of a few species not observed by the writer, but obtained or observed by Prof. W. H. Dall, and recorded in his valuable 'Notes on the Avifauna of the Aleutian Islands, especially those West of Unalashka' (San Francisco, March 14, 1874).

The list is small, but will doubtless be much increased when the locality is more thoroughly gone over, as the engrossing nature of other duties prevented me from giving as much time to the birds as was desirable. My stay on this group was from June 30, 1880, to May 19, 1881.

19.* *Cinclus mexicanus* Swains. A single individual, seen in August.

66.† *Troglodytes alascensis* Baird. Abundant. Resident.

? *Motacilla ocularis* Swinh. A single individual, seen May 14, 1881, was referred to this species.

70. *Budytes flavus* (Linn.) Gray. Rare. Late summer visitor. Not known to breed.

71.† *Anthus pennsylvanicus* (Lath.) Thienem. Not common. Summer visitor. Two pairs known to breed. No specimen secured.

174.† *Leucosticte griseinucha* (Brandt) Bp. Common. Resident.

186.† *Plectrophenax nivalis* (Linn.) Stejn. Common. Resident.

187.† *Calcarius lapponicus* (Linn.) Stejn. Common. Summer visitor. Breeds.

193.† *Passerculus sandwichensis* (Gmel.) Baird. Summer visitor. Breeds. Not common.

232.† *Melospiza cinerea* (Gmel.) Ridgw. Abundant. Resident.

280.† *Corvus corax carnivorus* (Bartr.) Ridgw. Abundant. Resident. Specimens not secured.

396.† *Asio accipitrinus* (Pall.) Newton. Not common. Resident.

406.† *Nyctea nyctea* (Linn.) Licht. Not common. Resident.

414a.† *Falco peregrinus pealei* Ridgw. Not rare. Resident.

430. *Circus hudsonius* (Linn.) Vieill. Rare. Summer visitor only.

449. *Aquila chrysaëtus canadensis* (Linn.) Ridgw. Rare. An occasional visitor only.

451. *Halæetus leucocephalus* (Linn.) Savig. Single individual seen.

† *Lagopus rupestris* var. Plentiful. Resident.

508. *Hæmatopus bachmani* Aud. Rare visitor at Attoo; occurs oftener at Semechi and Agattoo.

509. *Arenaria interpres* (Linn.) Vieill. Rare. Only seen in summer.

515a. *Charadrius dominicus fulvus* (Gmel.) Ridgw. Rare. Fall visitor only. No specimen secured.

Ægialites sp. Rare. Four individuals seen in September.

531.† *Tringa maculata* Vieill. Common. Summer visitor.

553. *Heteractitis incanus* (Gmel.) Stejn. Rare. Summer visitor.

564.† *Phalaropus lobatus* (Linn.) Stejn. Abundant. Summer visitor.

584. *Grus canadensis* (Linn.) Temm. Very rare. Fall straggler.

588. *Olor columbianus* (Ord) Stejn. Winter visitor. Not seen every year. No specimen secured.

* The number preceding the species refers to the species having that number in Ridgway's 'Nomenclature of North American Birds in U. S. National Museum,' 1881. Species marked † indicate those breeding.

- 593a. *Anser albifrons gambeli* (Hartl.) Coues. Casual visitor, according to Dall.
- 594a.† *Branta canadensis hutchinsi* (Sw. & Rich) Ridgw.—Abundant. Summer visitor.
598. *Philacte canagica* (Sevast.) Bann. Winter visitor. Abundant.
601. *Anas boschas* Linn. Not common. Fall and spring visitor.
607. *Anas americana* Gmel. Rare. Summer visitor. Not known to breed.
- 612.† *Anas carolinensis* Gmel. Common in summer. No specimen secured.
- 614.† *Fulix marila* (Linn.) Baird. Common. Resident.
- 616.† *Fulix collaris* (Donov.) Baird. Not common. Resident.
- Clangula* sp. Rare. Seen only in winter.
621. *Clangula albeola* (Linn.) Steph. Winter visitor only.
- 622.† *Histrionicus histrionicus* (Linn.) Boie. Very abundant. Resident.
- 623.† *Harelda hyemalis* (Linn.) Brehm. Very abundant in winter. Sparingly breeds.
- 625.† *Eniconetta stelleri* (Pall.) Gray. Abundant in winter. Breeds sparingly.
- 626.† *Arctonetta fischeri* (Brandt) Blak. Common. Resident. Breeds.
- 628.† *Somateria v-nigra* Gray. Common. Resident. Breeds.
- 630.† *Ædemia americana* Sw. & Rich. Rare in summer. Plentiful in winter. Breeds sparingly.
- 633.† *Ædemia perspicillata* (Cass.) Baird. Common. Resident. Breeds sparingly.
- 637.† *Merganser serrator* (Linn.) Schöff. Common. Resident. Breeds.
- 643b.† *Phalacrocorax dilophus cinnatus* (Brandt) Ridgw. Abundant. Resident. Breeds.
- 646.† *Phalacrocorax pelagicus* Pall. Numerous. Resident. Breeds.
- 658a. *Rissa tridactyla pollicaris* Stejn. Not abundant. Not known to breed.
- 659.† *Rissa brevirostris* Brandt. Abundant. Breeds. Not observed in winter.
- 662.† *Larus glaucescens* Licht. Abundant. Breeds.
- 687.† *Sterna paradisæa* Brünn. Plentiful. Breeding on Semechi.
- 698.† *Stercorarius parasiticus* (Linn.) Schöff. Common. Breeds on Agattoo.
699. *Stercorarius longicaudus* Vieill. Rare at Attoo. Two individuals seen.
701. *Diomedea albatrus* (Temm.) Pall. Rather common in March and April only.
- 705a. *Fulmarus glacialis glupischa* Stejn. Rare. Occurs mostly at Semechi.
- 723.† *Cymochorea leucorrhœa* (Vieill.) Coues. Breeds abundantly, according to Dall.
- 726.† *Oceanodroma furcata* (Gm.) Reich. Breeds. Specimens from Dall in U. S. Museum.

Colymbus sp.—Winter. An individual seen at Attoo.

739.† *Urinator pacificus* (Lawr.) Stejn. Common. Breeding.

740.† *Urinator lumme* (Brünn.) Stejn. Abundant. Resident. Breeds.

744.† *Fratercula corniculata* (Naum.) Gray. Extremely abundant. Breeds. Not resident.

745.† *Lunda cirrhata* Pall. Extremely abundant. Breeds. Not resident.

747.† *Cyclorrhynchus psittacula* (Pall.) Stejn. Plentiful on Agattoo. Breeds. Not resident.

748.† *Simorhynchus cristatellus* (Pall.) Merrem. Plentiful. Breeds. Not resident.

749.† *Simorhynchus pygmæus* (Gmel.) Brandt. Abundant. Breeds. Not resident.

750.† *Simorhynchus pusillus* (Pall.) Schleg. Abundant. Breeds on Agattoo. Not resident.

753.† *Synthliboramphus antiquus* (Gmel.) Brandt. Abundant. Breeds. Sparingly resident.

Brachyramphus sp. Seen in late fall and early winter only.

761†. *Cepphus columba* Pall. Common. Breeds. Not resident.

763a.† *Uria lomvia arra* (Pall.) Ridgw. Abundant. Resident.

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ON THE BREEDING HABITS OF SOME ARIZONA BIRDS.

BY W. E. D. SCOTT.

SECOND PAPER. *Icterus cucullatus*.

THE individual taste of birds in the matter of their nests is so well exemplified by the great differentiation in the nests of the Hooded Oriole (*Icterus cucullatus*), which is a very common breeding bird in the cañon described in the former paper of this series, that I propose to give a detailed description of ten nests taken here during the past summer, and incidentally to call attention to other nests of the same species taken in regions close at hand.

The birds arrive here about the middle of April, and are to be found until the last of September, and a few even well into